

Camp Navajo - Open Burn/Open Detonation Area

Boundaries:

The Camp Navajo Army Depot is located in Bellemont, in north-central Arizona. It is 12 miles west of Flagstaff and 17 miles east of Williams. The facility encompasses 28,347 acres and is situated in heavily forested to grassy, gently rolling to steep hilly terrain approximately 7,100 feet above mean sea level. The Open Burn/Open Detonation (OB/OD) area is located in the southern part of Camp Navajo and abuts the Kaibab and Coconino National Forests to the south. The OB/OD area is estimated to be between 2,000 to 5,000 acres.

Site History:

The Navajo Army Depot (whose name was changed in 1993 to Camp Navajo) was created by an Act of Congress in 1942. Camp Navajo was used by the Department of the Army for the storage of materials and ordnance, and, for the last 50 years, for the demilitarization and disposal of obsolete or unserviceable conventional ammunition, explosives, and chemical warfare agents. Some of these activities took place in the OB/OD area.

- Activities in the OD portion of the OB/OD area included detonation of explosives and pyrotechnics. The OB portion of the OB/OD area included burning of dunnage, empty containers, chemicals, and hazardous materials.
- Dumping occurred in the OB/OD area at sites such as the TNT washout lagoons and the Former White Phosphorus Detonation and Burn Area (a.k.a. Chemical Canyon). Four landfills containing ordnance and visible unexploded ordnance (UXO) are located in the OB/OD area.
- Environmental studies of the facility began in 1979.
- In September 1993, the installation's lease was transferred to the Arizona Army National Guard (AZ ARNG) in a Memorandum of Agreement (MOA) between the Department of the Army and the AZ ARNG under the Base Realignment and Closure (BRAC) Act. Under this agreement, the Army National Guard Bureau (NGB) maintained responsibility for cleanup activities at the facility.
- The Army's demilitarization activities in the OB/OD area have been regulated under the Resource Conservation and Recovery Act (RCRA) under an interim status permit. Demilitarization and detonation activities ceased in September 1994 in connection with the closure of Camp Navajo under BRAC 1.
- Contamination at the facility did not qualify the site for inclusion on the U.S. Environmental Protection Agency's National Priorities (Superfund) List. However, the facility is subject to all state and federal laws and is being cleaned up to federal standards as part of the Department of Defense's Installation Restoration Program (IRP).

- In 1998, the Army Material Command submitted a closure plan for the OB/OD area, but ADEQ asked for additional sampling and site cleanup, an agreement for which was negotiated and finalized in June 2002.
- Between 1998 and 2001, very little progress was made on further investigation of the OB/OD area because of Army funding. In February 2001, a preliminary geophysical report was submitted to ADEQ that revealed the potential UXO in the OB/OD area is worse than that previously suspected.
- In February of 2002, a Stakeholder's Advisory Group (SAG) was formed to assist the NGB with stakeholder concerns. The SAG consists of members from agencies such as The U.S. Fish and Wildlife Service, The Arizona Game and Fish Department, The U.S. Forest Service, The Arizona Army National Guard, and Grand Canyon Trust.
- Since 2002, remedial activities that have occurred in the OB/OD area include: repairing and replacement of the fence around the OB/OD area, conducting an airborne ordnance detection survey, posting of warning signs around the OB/OD area in English and Spanish, conducting an archive search report, performing detonation pit sampling, a formal consultation with the U.S. Fish and Wildlife, conducting a biological survey, finalizing the community relations plan update, and distributing a hunting advisory flyer.
- Camp Navajo is home of several threatened and endangered species, including the bald eagle, northern goshawk, ferruginous hawk, osprey, peregrine falcon, the Mexican Spotted Owl and the Arizona toad. Other inhabitants include the pronghorn and elk. A critical habitat for Mexican Spotted Owl is located in the south-eastern portion of the OB/OD area.
- Due to the weather in the Bellemont area, the field season would normally last from May thru November. Because the Mexican Spotted Owl's mating season is from March 1st to August 31st, the field season is cut short to September thru (approximately) November.
- The NGB awarded a contract to Brown and Caldwell for remedial activities.
- During a soil and surface water sampling event in January 2003, submunitions were encountered in the historical OB/OD area. Due to this finding, the area was closed in accordance with DoD policy, and no one is permitted to enter the OB/OD area. The NGB is currently awaiting approval of a Department of Army waiver, which would allow access back into the area. If this waiver is approved, 2003 field activities may begin as scheduled.
- During the past quarter, the NGB has prepared the following documents for ADEQ's review: (1) Background and Remediation Metal Standards Technical Memorandum, (2) an Archive Search Report, (3) the Draft-Final Report Airborne Geophysical Survey for Unexploded Ordnance, (4) the Community Relations Plan, and (4) The Final Draft Summary Letter Report of the Open Detonation Pit Sampling Event.

- On April 1, 2003, ADEQ representatives met with NGB representatives to discuss the future remediation goals for the OB/OD area. ADEQ representatives were assured by the new NGB Director of Environmental Programs that funding was available for fiscal year '04 for projected remediation activities.
- In April of 2003, an ADEQ fact sheet was distributed to residents of Bellemont and the western portion of Flagstaff.

Site Status:

- The removal action for the landfill began in January 2004 and was completed in September 2005. ADEQ is awaiting the results from the confirmation sampling. In October of 2004, the NGB completed a removal site evaluation (RSE) for NAAD 09C (aka Chemical Canyon Landfill). The RSE was performed prior to the removal action of the landfill.
- During the Phase I sampling in April 2005, NAADs 05 and 06 had contaminant levels above regulatory levels which, per the approved work plan, led to a Phase II vertical extent investigation in October 2005. In October 2004, the NGB's contractor began investigation at four of the open burn areas (NAADs 05, 06, 08B, and 09D) which are included in the RCRA permit. The investigation consisted of surface and subsurface soil sampling. Additional trenching was performed in NAAD 08B to investigate numerous historical trenches.
- In June 2005, ADEQ met with the NGB's contractor to discuss investigation activities in NAADs 10, 08A, 09A, E76, 04, and 01. These sites are not included in the RCRA permit and are being investigated under a fixed based contract. ADEQ received the work plan in October 2005 to address data gaps within each NAAD. Field work began in October 2005.
- In October of 2004, the NGB began a soil investigation in the NAAD 02 (aka Open Detonation Pits) area. Both surface and subsurface samples have been collected. ADEQ is awaiting the Remedial Investigation Report.
- In July of 2004, the NGB began a surface water and groundwater investigation in the OB/OD area. Perchlorate is being analyzed in this investigation. Groundwater results have been non-detect for contaminants of concern.
- A total of twelve BLU-3's have been located to date. These BLU-3 submunitions were blown in place (BIP), with the final BIP in July 2004.
- During the summer of 2003, the NGB completed a surface sweep of the floor of the Former White Phosphorus Open Burn Area (aka Chemical Canyon, NAAD 03) which allowed for a safer environment so a remedial investigation and feasibility study could be performed. Items retrieved were detonated in a contained detonation chamber and wastes were disposed of accordingly. A geophysical survey was performed after the

sweep was completed. The geophysical survey was used to determine areas that may have been used for open burning or detonation of white phosphorus rounds.

Site Hydrogeology:

- The Camp Navajo area is underlain by unconsolidated Quaternary alluvial deposits, volcanic rocks of Quaternary and Tertiary age and Paleozoic sedimentary rocks, mostly sandstones, limestones and shales. Outcrops of the volcanic unit are predominantly basaltic and range from lava flows to cinder cones. Thirteen volcanic vents have been identified within Camp Navajo's boundaries
- Several faults have been identified cutting Paleozoic sedimentary rocks and Quaternary-Tertiary volcanic rocks. These faults are regionally important with respect to groundwater sources and recharge.
- The regional water table, occurring in the Coconino-Supai sandstone aquifer, is encountered at approximately 1,270 feet below ground surface. Several perched water tables, controlled by local geologic conditions, are present above the regional unconfined aquifer. These perched saturated zones have been identified at various depths to 350 feet and have been the predominant source of groundwater in wells immediately adjacent to Camp Navajo.
- The City of Flagstaff relies on the Coconino aquifer for its municipal drinking water; its production wells are located at the Woody Mountain Wellfield, three miles southeast of the eastern boundary of Camp Navajo.
- Within the Coconino aquifer, groundwater flow is north to northeast as in Flagstaff.
- The OB/OD area contains two canyons: The Former White Phosphorous Detonation and Burn Area (a.k.a. Chemical Canyon) and Volunteer Canyon. The Former White Phosphorous Detonation and Burn Area Canyon is a tributary of Volunteer Canyon. Volunteer Canyon joins Sycamore Canyon and Sycamore Creek only 5.5 miles downstream of Camp Navajo.
- Within the OB/OD area, the Fossil Mountain and the Harrisburg members of the Kaibab Formation are the dominant rock units present. These units are bisected by several northeast striking normal faults and associated fracture sets that are surficially exposed in outcrop.
- The Fossil Mountain member of the underlying Kaibab Formation consists of approximately 75 meters of thick-bedded limestone, sandy-limestone, and sandstone, while the overlying Harrisburg member consists of approximately 50 meters of reddish-orange to white, thinly bedded, sand-silty limestone, calcareous silty sandstone.

Contaminants:

The contaminants of concern in the OB/OD area include: metals, volatile organic compounds (VOCs), pesticides, white phosphorus, unexploded ordnance (UXO), and chemicals resulting from exploded ordnance.

Public Health Impacts:

A public health risk exists due to UXO on the site. This risk is managed by restricting public access to the area; only AZ ARNG and NGB personnel with a UXO escort are allowed. In addition, fencing which includes warning signs is located around the OB/OD area and is maintained regularly by Camp Navajo personnel.

Community Involvement Activities:

- In February of 2002, a Stakeholder's Advisory Group (SAG) was formed to assist the NGB with stakeholder concerns. The SAG consists of members from agencies such as The U.S. Fish and Wildlife Service, The Arizona Game and Fish Department, The U.S. Forest Service, The Arizona Army National Guard, and Grand Canyon Trust.
- In April of 2003, an ADEQ fact sheet was prepared and distributed to residents of Bellemont and the western portion of Flagstaff.
- All SAG meetings are open to the public. Meeting dates, agendas, and minutes are posted on ADEQ's website. If you would like to access any of these documents, please go to www.adeq.state.az.us/environ/waste/sps/reg.html.

Information Repository

Interested parties may view site information at the information repository at the Cline Library located at 901 South Knoles Drive, Building 28, in Flagstaff, (928) 523-4459. Site information is also available at the ADEQ main office located at 1110 West Washington Street, Phoenix. Site information is available for review Monday through Friday from 8 a.m. to 5 p.m. To arrange for a time to review the public site file, please call the ADEQ Records Center (602) 771-4378 or (800)234-5677 (Arizona toll free).

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